

## CLAIMS

1. An anti-inflammatory compound comprising the structure:

X<sub>a</sub>-X<sub>b</sub>,

5 wherein X<sub>a</sub> is a membrane translocation domain comprising from 6 to 15 amino acid residues; and X<sub>b</sub> is a NEMO binding sequence.

10 2. The anti-inflammatory compound of claim 1, further comprising a modifying group.

15 3. The anti-inflammatory compound of claim 1, wherein X<sub>b</sub> consists of the following structure:

(Y)<sub>n</sub>-X<sub>1</sub>-X<sub>2</sub>-X<sub>3</sub>-X<sub>4</sub>-X<sub>5</sub>-X<sub>6</sub>-(A)<sub>m</sub>

15 wherein

n and m are each, independently, 0 or 1;

A and Y each comprises from 1 to about 3 amino acid residues;

X<sub>1</sub> is L, A, I or nor-leucine (Nle);

20 X<sub>2</sub> is D, E, N, Q, homoserine (Hser) or 2-ketopropylalanine (2-ketopropyl-A);

X<sub>3</sub> is W, F, Y, 4-biphenyl-alanine (Bpa), homophenylalanine (Hphe), 2-

Naphthylalanine (2-Nal), 1-Naphthylalanine (1-Nal), or cyclohexyl-alanine (Cha);

X<sub>4</sub> is S, A, E, L, T, nor-leucine (Nle), or homoserine (Hser);

X<sub>5</sub> is W, H, homophenylalanine (Hphe), 2-Naphthylalanine (2-Nal), 1-

25 Naphthylalanine (1-Nal), O-benzyl serine (SeroBn), or 3-Pyridylalanine (3-Pal); and

X<sub>6</sub> is L, A, I, or nor-leucine (Nle).

30 4. The anti-inflammatory compound of claim 1, wherein n is 1 and Y is the sequence TA.

30 5. The anti-inflammatory compound of claim 1, wherein m is 1 and A is the sequence QTE.

35 6. The anti-inflammatory compound of claim 1, wherein X<sub>b</sub> is a sequence selected from the group consisting of TALDWSWLQTE; LDWSWLQTE; TALDWSWL; ALDWSWLQTE; LDWSWLQTE; LDWSWL; TALDWSWLQT; TALDWSWLQ; ALDWSWLQT; LDWSWLQ; LDWSWLQT; ADWSWL; LDWSWA; ADWSWA; LDFSWL; LDYSWL; LDWAWL; LDWEWL;

TAADWSWLQTE; ADWSWLQTE; TAADWSWL; AADWSWLQTE;  
ADWSWLQTE; ADWSWL; TAADWSWLQT; TAADWSWLQ; AADWSWLQT;  
ADWSWLQ; ADWSWLQT; ALDWSWAQTE; LDWSWAQTE; TALDWSWA;  
ALDWSWAQTE; LDWSWAQTE; LDWSWA; TALDWSWAQT; TALDWSWAQ;  
5 ALDWSWAQT; LDWSWAQ; LDWSWAQ; TAADWSWAQTE; ADWSWAQTE;  
TAADWSWA; AADWSWAQTE; ADWSWAQTE; ADWSWA; TAADWSWAQT;  
TAADWSWAQ; AADWSWAQT; ADWSWAQ; ADWSWAQ; TALDFSWLQTE;  
LDFSWLQTE; TALDFSWL; ALDFSWLQTE; LDFSWLQTE; LDFSWL;  
TALDFSWLQT; TALDFSWLQ; ALDFSWLQT; LDFSWLQ; LDFSWLQT;  
10 TALDYSWLQTE; LDYSWLQTE; TALDYSWL; ALDYSWLQTE; LDYSWLQTE;  
LDYSWL; TALDYSWLQT; TALDYSWLQ; ALDYSWLQT; LDYSWLQ;  
LDYSWLQT; TALDWAWLQTE; LDWAWLQTE; TALDWAWL; ALDWAWLQTE;  
LDWAWLQTE; LDWAWL; TALDWAWLQT; TALDWAWLQ; ALDWAWLQT;  
LDWAWLQ; LDWAWLQT; TALDWEWLQTE; LDWEWLQTE; TALDWEWL;  
15 ALDWEWLQTE; LDWEWLQTE; LDWEWL; TALDWEWLQT; TALDWEWLQ;  
ALDWEWLQT; LDWEWLQ; and LDWEWLQT.

7. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> consists of 6-12 amino acid residues.

20        8.        The anti-inflammatory compound of claim 1, wherein  $X_a$  consists of 6-10 amino acid residues.

9. The anti-inflammatory compound of claim 1, wherein  $X_a$  comprises at least five basic amino acid residues.

10. The anti-inflammatory compound of claim 1, wherein X<sub>a</sub> comprises at least five amino acid residues independently selected from L-arginine, D-arginine, L-lysine and D-lysine.

30        11.      The anti-inflammatory compound of claim 1, wherein  $X_a$  is selected  
from the group consisting of RRMKWKK; YGRKKRRQRRR; ygrkkrrqrr;  
YARKARRQARR; yarkarrqarr; YARAARRAARR; yaraarraarr; rrmkwkk, RRRRRR,  
RRRRRRR, RRRRRRRR, RRRRRRRRR, RRRRRRRRRR, RRRRRRRRRRR, .  
35      rrrrrr, rrrrrrr, rrrrrrrr, rrrrrrrrr, rrrrrrrrrr, and rrrrrrrrrrr.

12. An anti-inflammatory compound comprising an amino acid sequence selected from the group consisting of: RRMKWKKTALDWSWLQTE;

rrmkwkkTALDWSWLQTE; YGRKKRQRRRTALDWSWLQTE;  
ygrkrrqrrTALDWSWLQTE; rrrrrrTALDWSWLQTE;  
RRRRRRRTALDWSWLQTE; YARKARRQARRTALDWSWLQTE;  
yarkarrqarrTALDWSWLQTE YARAARRAARRTALDWSWLQTE;  
5 yaraarraarrTALDWSWLQTE YGRKKRQRRRLDWSWL; ygrkrrqrrrLDWSWL;  
RRMKWKLDWSWL; rrmkwkkLDWSWL; rrrrrrLDWSWL;  
YARAARRAARRLDWSWL; yaraarraarrLDWSWL; and RRRRRRLDWSWL.

13. An anti-inflammatory compound having a structure selected from the  
10 group consisting of:

H-RRMKWKKTALDWSWLQTE-NH<sub>2</sub>;  
H-YGRKKRQRRRTALDWSWLQTE-NH<sub>2</sub>;  
H-rrrrrrrTALDWSWLQTE-NH<sub>2</sub>;  
H-YARKARRQARRTALDWSWLQTE-NH<sub>2</sub>;  
15 H-YARAARRAARRTALDWSWLQTE-NH<sub>2</sub>;  
H-RRMKWKLDWSWL-NH<sub>2</sub>;  
H-rrmkwkkLDWSWL-NH<sub>2</sub>;  
H-rrrrrrrLDWSWL-NH<sub>2</sub>;  
H-YARAARRAARRLDWSWL-NH<sub>2</sub>;  
20 H-yaraarraarrLDWSWL-NH<sub>2</sub>; and  
H-YGRKKRQRRRLDWSWL- NH<sub>2</sub>.

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